

REMARKS

This responds to the Office Action mailed on November 15, 2004.

Claims 22, 28 and 36 are amended, no additional claims are canceled, and claims 44-46 are added; as a result, claims 1-3, 5-9 and 22-46 are now pending in this application, with claims 1-3, 5-9, 25-26 and 33-35 withdrawn from consideration.

Regarding the withdrawn claims, Applicant notes that upon allowance of a generic claim, Applicant is entitled to consideration of claims to additional species written in dependent form or which otherwise include all the limitations of an allowed generic claims as provided by 37 CFR 1.141. Applicant asserts that at least claim 28 is generic.

The amendments made herein have been to clarify the claims and are not intended to limit the scope of equivalents to which any claim element may be entitled. The amendments to the claims and new claims have support throughout the specification. No new matter has been added as a result. Applicant respectfully requests reconsideration of the above-identified application in view of the amendments above and the remarks that follow.

§112 Rejection of the Claims

Claims 22-24, 27-32 and 36-43 were rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The Office Action states that the recitation of "aspect ratio" is not clearly defined.

Applicant submits that claims 22-24, 27-32 and 36-43 recite the subject matter with a reasonable degree of clarity and precision sufficient to apprise one of ordinary skill in the art of the scope. Applicant submits that the claims, when read as a whole, inform one of skill in the art as to the relationship between the various elements.

Specifically, the term "aspect ratio" is commonly understood to refer to the "ratio of one dimension to another." (See, for example, Merriam-Webster's Online Dictionary, 10th Edition). More specifically, the term "aspect ratio" as used herein, is clearly understood in the art to refer to a ratio of fin height to fin thickness. Furthermore, the specification at page 5, lines 17-18 states that the aspect ratio is a measurement that is indicative of fin height to fin thickness. When

read as a whole, it is believed that the scope of the claimed subject matter is reasonably clear in light of the specification, known art and the claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made.

However, in an effort to facilitate prosecution, claims 22, 28 and 36 have been amended accordingly.

Reconsideration and withdrawal of this rejection is respectfully requested.

§103 Rejection of the Claims

Claims 22, 23 and 27

Claims 22, 23 and 27 were rejected under 35 USC § 103(a) as being unpatentable over Wyler et al. (U.S. 6,401,807) in view of Azar et al. (U.S. 5,304,846). This rejection is respectfully traversed.

The Office Action asserts that Wyler discloses all the claimed limitations except a specific aspect ratio of the fin height to fin thickness and that Azar discloses a heat sink comprising a folded fin having an aspect ratio of about 18 to 200 to optimize heat exchange. The Office Action concludes that it would have been obvious to employ such an aspect ratio in Wyler.

Applicant respectfully submits that the Office Action has not established the *prima facie* obviousness of the present claims. To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. MPEP 2142 (citing In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed.Cir. 1991)).

Applicant further notes that claims 23 and 27 are dependent claims. If an independent claim is allowable, then any claim depending therefrom is allowable.

Wyler does not teach or suggest the claimed invention. Wyler discusses a heat sink assembly having a complex spring clamp 121 which extends under the entire length of the fin structure and includes a series of flexible linkages for pressing a trough against the base plate. Applicant further can find no appreciation or understanding of aspect ratio in Wyler. Rather, Wyler essentially teaches away from the use of a particular aspect ratio, believing that it is only the height of the fins which affect total heat dissipation (col. 9, lines 18-35). In fact, Wyler discusses maintaining fin width at a constant value, preferably 0.254 mm, while varying fin height depending on the desired application. A prior art reference must be considered in its entirety, including portions that teach away from the claimed invention. The fact that a reference teaches away from a claimed invention is highly probative that the reference would not have rendered the claimed invention obvious to one of ordinary skill in the art. Stranco Inc. v. Atlantes Chemical Systems, Inc., 15 USPQ2d 1704, 1713 (Tex. 1990).

Azar does not overcome the deficiencies of the primary reference. Azar discusses a narrow channel finned heat sink with rectangular-shaped parallel fins. Azar is attempting to optimize cooling by adjusting fin height and thickness. Applicant further can not find any discussion in Azar of any embodiments that included providing openings in the fin or an arch-shaped fin.

Clearly, the product in the primary reference and the product in the secondary reference are fundamentally different from one other and such critical differences must be recognized. In re Bond, 910 F.2d 831, 834, 15 USPQ2d 1566, 1568 (Fed. Cir. 1990), *reh'g denied*, 1990 U.S. App. LEXIS 19971 (Fed. Cir.1990).

In contrast, claim 22, as amended, recites a heat sink, comprising a thermally conductive sheet creased in an accordion fold to form a plurality of surfaces defining a fin bundle having a top and a bottom, each fin having an aspect ratio of between about 20:1 and 30:1, wherein the aspect ratio is a ratio of fin height to fin thickness and the top of the fin bundle is modified to create a plurality of trimmed openings that extend along a portion of the length of the top of the fin bundle, wherein the top of the fin bundle comprises a plurality of arches and the trimmed openings are formed by removing the plurality of arches along the portion of the length of the top, wherein more than fifty percent of the plurality of surfaces are receptive to an introduced convection medium; a fan for introducing the convection medium, the fan attached to the top of

the fin bundle; a base attached to the bottom of the fin bundle; and a clip to attach and thermally couple the base to the bottom of the fin bundle, the clip not in contact with the top of the fin bundle when in place.

Furthermore, Applicant can find no teaching or suggestion in Wyler *as to the desirability* of using a particular aspect ratio as the Office Action suggests. It has also been established that the Office Action must provide specific, objective evidence of record for a finding of a suggestion or motivation to combine reference teachings and must explain the reasoning by which the evidence is deemed to support such a finding. *In re Sang Su Lee*, 277 F.3d, 1338, 61 USPQ2d 1430 (Fed. Cir. 2002). The statement in the Office Action that, "since Wyler et al and Azar et al are both from the same field of endeavor and/or analogous art, the purpose disclosed by Azar et al would have been recognized in the pertinent art of Wyler et al," is a conclusory statement of subjective belief. Conclusory statements do not adequately address the issue of motivation to combine. *In re Sang Su Lee*, *supra*. Essentially, the current invention has been used as a roadmap to identify the purpose leading one to make the combination. The Office Action has provided no objective evidence for a suggestion or motivation to combine the references and the rejection should be withdrawn.

The references neither independently, or combined, contain each and every element of Applicant's claimed invention. (When evaluating the scope of a claim, every limitation in the claim must be considered. *In re Ochiai*, *supra*).

Applicant respectfully submits that independent claim 22, and claims 23 and 27, which depend from claim 22, are patentably distinct from the cited references, either alone or in combination. Claims 22-23 and 27, each viewed as a whole, are not suggested by the cited references and not obvious under 35 USC § 103(a).

Reconsideration and withdrawal of this rejection is respectfully requested.

Claim 24

Claim 24 was also rejected under 35 USC § 103(a) as being unpatentable over Wyler et al. in view of Azar et al., and further in view of Yamamoto et al. (U.S. 5,642,779). This rejection is respectfully traversed.

Applicant respectfully submits that claim 24 is allowable because it depends on amended independent claim 22 which Applicant submits is allowable for the reasons stated above. If an independent claim is allowable, then any claim depending there from is allowable. Claim 24 is further allowable because Yamamoto does not cure the deficiencies discussed above with respect to the combination of Wyler in view of Azar.

Thus, Applicant respectfully requests reconsideration and withdrawal of the 35 USC § 103(a) rejections based on Wyler et al. in view of Azar et al., and further in view of Yamamoto et al. (U.S. 5,642,779).

Claims 28-31

Claims 28-31 were also rejected under 35 USC § 103(a) as being unpatentable over Azar et al. in view of Bishop et al. (U.S. 5,576,932). This rejection is respectfully traversed.

The Office Action asserts that Azar discloses all the claimed limitations except a top fan and that Bishop discloses a heat sink comprising a top fan and a front fan. The Office Action concludes that it would have been obvious to employ a top fan in Azar.

Applicant again respectfully submits that the Examiner has not established the *prima facie* obviousness of the present claims.

Furthermore, claims 29-31 are dependent claims. If an independent claim is allowable, then any claim depending therefrom is allowable.

Azar does not teach or suggest the claimed invention for all the reasons stated above. Indeed, Azar does not recognize the problem solved by Applicant's invention and so cannot suggest its solution. For example, Azar is limited to rectangular-shaped fins having no openings. Bishop does not overcome the deficiencies of Azar for all the reasons of record. Bishop discusses a method and apparatus for cooling a heat source using a base that includes flanges referred to as "rectangular-shaped fins," such flanges in contact on their top surfaces with a plate 16 having openings 28. (See col. 4, lines 8-16). As with Azar, Applicant can not find any discussion in Bishop of any embodiments that included providing openings in the flanges (referred to in the Office Action as "fins").

Clearly, the product in the primary reference and the product in the secondary reference are fundamentally different from one other and such critical differences must be recognized. In re Bond, supra.

However, as noted above, Bishop does share a unique feature in common with Azar, namely, the absence of any openings in the fins, which demonstrates a lack of appreciation of the inherent benefit provided by such openings (i.e., increased surface area for cooling). Such a fin structure teaches away from the claimed invention, which must be considered "as a whole." Furthermore, a prior art reference must be considered in its entirety, including portions that teach away from the claimed invention. Stranco Inc. v. Atlantes Chemical Systems, Inc., supra.

The Office Action must provide specific, objective evidence of record as noted above, which it has failed to do. Conclusory statements do not adequately address the issue of motivation to combine. In re Sang Su Lee, supra. Applicant respectfully requests such objective evidence be provided or the rejection be withdrawn.

The references neither independently, or combined, contain each and every element of Applicant's claimed invention. Applicant respectfully submits that independent claim 28 and claims 29-31 which depend from claim 28, are patentably distinct from the cited references, either alone or in combination. Claims 28-31, viewed as a whole, are not suggested by the cited references and are not obvious under 35 USC § 103(a). Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 32, 36-40 and 43

Claims 32, 36-40 and 43 were also rejected under 35 USC § 103(a) as being unpatentable over Wyler et al. in view of Azar et al. and further in view of Bishop et al. This rejection is respectfully traversed.

The Office Action asserts that the combined teachings of Wyler and Azar lack a front fan and that Bishop discloses a heat sink comprising a top fan and front fan. The Office Action concludes that it would have been obvious to employ in Azar a second front fan.

Applicant again respectfully submits that the Office Action has not established the *prima facie* obviousness of the present claims.

Furthermore, claims 32, 37-40 and 43 are dependent claims. If an independent claim is allowable, then any claim depending therefrom is allowable.

None of the references teach or suggest the claimed invention for all the reasons stated of record.

Furthermore, Applicant can find no teaching or suggestion in Azar *as to the desirability* of employing any fans, let alone two fans as the Office Action suggests. Instead, Azar is limited to providing narrow channel finned heat sinks of specific dimensions for heat dissipation. There is no indication of any appreciation of the problem being solved by Applicant's invention of providing, for example, arch-shaped fins, openings in the fins, or, "a first fan for introducing the convection medium, the fan attached to the top of the fin bundle; [and] a second fan for introducing the convection medium, the fan attached to the front of the fin bundle," as recited in claim 36, as amended. See MPEP 2141.01(a).

When a person, having the references before him and not cognizant of Applicant's disclosure, would not be informed that a problem (solved by Applicant's claimed invention) ever existed, such references (which never recognized the problem) *could not have suggested its solution*. Combining references in this manner is improper. *In re Shaffer*, 229 F.2d 476, 108 USPQ 326, 329 (CCPA 1956). Focusing on the obviousness of substitutions and differences instead of on the invention as a whole is a legally improper way to simplify the difficult determination of obviousness. *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 231 USPQ 81, 93 (Fed. Cir.1986).

The Office Action has provided no reasoning or objective evidence for a suggestion or motivation to combine the references and the rejection should be withdrawn. Notification to this effect is respectfully requested. (See also *In re Sang Su Lee*, *supra*).

The references neither independently, or combined, contain each and every element of Applicant's claimed invention. (When evaluating the scope of a claim, every limitation in the claim must be considered. *In re Ochiai*, *supra*).

Applicant respectfully submits that independent claim 28 and claim 32 which depends therefrom and independent claim 36 and claims 37-40 and 43 which depend therefrom, are patentably distinct from the cited references. Claims 32, 36-40 and 43, each viewed as a whole, are not suggested by the cited references and not obvious under 35 USC § 103(a).

Reconsideration and withdrawal of this rejection is respectfully requested.

Claim 41

Claim 41 was also rejected under 35 USC § 103(a) as being unpatentable over Wyler et al. in view of Azar et al. and Bishop et al. and further in view of Yamamoto et al. This rejection is respectfully traversed.

Applicant respectfully submits that claim 41 is allowable because it depends on amended independent claim 36 which Applicant submits is allowable for the reasons stated above. If an independent claim is allowable, then any claim depending there from is allowable. Claim 41 is further allowable because Yamamoto does not cure the deficiencies discussed above with respect to the combination of Wyler in view of Azar and Bishop.

Thus, Applicant respectfully requests reconsideration and withdrawal of the 35 USC § 103(a) rejections based on Wyler et al. in view of Azar et al. and Bishop et al. and further in view of Yamamoto et al.

Claims 42 and 43

Claims 42 and 43 were also rejected under 35 USC § 103(a) as being unpatentable over Wyler et al. in view of Azar et al. and further in view of Bright et al. (U.S. 4,716,494). This rejection is respectfully traversed.

Applicant respectfully submits that claims 42 and 43 are allowable because they depend on amended independent claim 36 which Applicant submits is allowable for the reasons stated above. If an independent claim is allowable, then any claim depending there from is allowable. Claims 42 and 43 are further allowable because Bright does not cure the deficiencies discussed above with respect to the combination of Wyler in view of Azar.

Thus, Applicant respectfully requests reconsideration and withdrawal of the 35 USC § 103(a) rejections based on Wyler et al. in view of Azar et al. and further in view of Bright et al. (U.S. 4,716,494).

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney, Barbara Clark at (515) 233-3865, or the below signed attorney to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: MS Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 18th day of January 2005.

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